**1.1K Carbohydrates**

Make notes on carbohydrates by answering the following questions

1. Broken down, what does the word carbohydrate mean?
2. Monosaccharides are often called simple sugars. What is a monosaccharide and why are they soluble in water?
3. How are monosaccharides classified?
4. Glucose and fructose are both hexose monosaccharides, with identical molecular formulae. Why are they classed as different sugars and have different properties?
5. Draw the straight form and ring structure form for glucose. When do they exist in their different forms? Label the carbon atoms 1 – 6.
6. Disaccharides are formed when two monosaccharides undergo a condensation reaction. Below are some common disaccharides, complete the table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Disaccharide** | **Monosaccharide 1** | **Monosaccharide 2** | **Function** |
| Maltose |  |  |  |
| Lactose |  |  |  |
| Sucrose |  |  |  |

1. Draw a diagram to show the formation of maltose. Explain why this is known as a condensation reaction. What is the name of the bond that forms?
2. Glucose comes in different forms, namely, α andβ. Draw these molecules and highlight the differences.
3. In polysaccharides, monosaccharides are joined together to form polymers. Four common polysaccharides are all formed from glucose and yet they have diverse structural properties and functions. For each of the following, describe how they are formed, their structure and how this relates to their function:

* Starch
* Glycogen
* Cellulose
* Chitin

1. What role does hydrogen-bonding play in helping to maintain the structure of the above polysaccharides?